



The Marine Reserves Regional Enhancement Plan for the Wider Caribbean (MAREP)

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The Marine Reserves Regional Enhancement Plan for the Wider Caribbean



What is the MAREP?

The Wider Caribbean's Marine Reserves Regional Enhancement Plan (MAREP) is an effort led by the IUCN World Commission of Protected Areas-Marine (WCPA-Marine) aiming at furthering, and ultimately, mainstreaming **marine reserves** (referred to in this document as no-take areas) as a tool for biodiversity conservation, and fisheries resources management and restoration for the Wider Caribbean region (or Tropical Northwestern Atlantic Marine Province). The MAREP includes the identification of priority needs and gaps in fulfilling this goal and proposed projects that can help researchers, natural resource and protected area managers, and educators to better address those needs. Assistance will also be provided in identifying potential funding sources for the MAREP. The MAREP is part of a larger, long term, region-wide initiative to improve the effectiveness of marine protected areas in the Wider Caribbean that recognizes the need for sharing resources and coordinating efforts with existing initiatives in order to build synergy and facilitate the accomplishment of the overall objective. Additionally, this project responds to the vision of the WCPA Marine initiative which is to promote the effective establishment and management of a worldwide, representative network of terrestrial and marine protected areas for the protection, restoration, wise use, understanding and enjoyment of the marine heritage of the world.

The primary goal of IUCN's marine program is "To provide for the protection, restoration, wise use, understanding and enjoyment of the marine heritage of the world in perpetuity through the creation of a global, representative system of marine protected areas and by building the capacity to manage these areas in accordance with the principles of the World Conservation strategy of human activities that use or affect the marine environment". WCPA/Marine developed a strategy that identified a program for implementation of the most important actions required to create an interactive collaborative partnership at the global, regional, and national levels to build capacity and advance the management of marine protected areas within the global network.

At the core of the WCPA-Marine strategy are three themes that have been identified for the WCPA-Marine activities based on past work and consultations with membership. These priority themes are:

- Sustainable fisheries management and for protecting and restoring marine biodiversity: Demonstrate the effectiveness of MPAs as a tool of sustainable fisheries management and protecting and restoring marine biodiversity;
- Sustainable tourism: Create new partnerships in which tourism stakeholders participate in MPA management to conserve, restore and maintain marine ecosystems;
- Integrated Coastal Management: Implement MPAs as exemplary systems of integrated and participatory management, serving as 'building blocks' for sustainability through integrated coastal management

These themes areas are implemented in program activities undertaken by the WCPA-Marine Secretariat and Regional Working Groups, using the unique structure and expertise of IUCN Commissions and Programs as well as IUCN members and partners. Activities are delivered at the global, regional and national levels and are intended to build capacity of institutions and practitioners while building a sustainable network of globally representative marine protected areas.

This MAREP responds directly to the WCPA/Marine activities on sustainable fisheries. The MAREP, is a collaborative effort to further develop opportunities to establish a role for no-take reserves in marine biodiversity conservation and sustainable fisheries management in the Caribbean in partnership with regional and national sustainable fisheries and marine protected area experts. The MPA Sustainable Fisheries Initiative is designed to develop regional action plans for identifying, establishing, and networking no-take activities in the regions and facilitating access to funding of these activities.

The background and rationale

Marine reserves (also known as fishery replenishment zones, no-take areas and wilderness areas) have attracted the attention of researchers, coastal planners and resources managers as a promising tool to protect marine biodiversity and manage fisheries resources. They are designed to provide a **spatial refuge** that affords protection to habitats and species by eliminating fishing, harvesting, and other types of extractive activities such as mining and oil extraction (Bohnsack, 1998).

The **spatial refuge** protects marine populations from harvesting, while more traditional fisheries management methods attempt to provide a **numerical refuge** which allows a portion of the population to escape harvest. The latter incorporates size limits, fishing quota, gear restrictions, and/or closed seasons, which can result in compliance and enforcement challenges; the former strategy relies on a unique or representative ecosystem that is set aside for non-consumptive usage within geographically defined boundaries. Similarly, spatial refuges will not be effective as a source of fish to the surrounding area if fish harvesting is not well regulated and the regulations are not properly enforced. All tools are important and need to be integrated in a comprehensive coastal-watershed integrated management plan that allows for habitat and population sustainable use.

Due to the increasing effectiveness of fishing methods, the historical "spatial refuge" in deep and remote areas is becoming less common. Fishermen go deeper and farther and invest more to get the same catches or, most frequently, to get less and smaller fish. As a result of the decline in fish abundance, current fishermen discredit as exaggeration the accounts of fish abundance by their grandparents, a condition described as 'shifting baselines' (Pauly, 1995; Bohnsack, 2003). Marine reserves also have cultural, aesthetic and scientific values as they provide opportunities to understand the effects of fishery management strategies on ecosystems, enhance economic and recreational opportunities, and protect ecosystem structure and function. Furthermore, they allow people to examine how natural systems functioned decades ago.

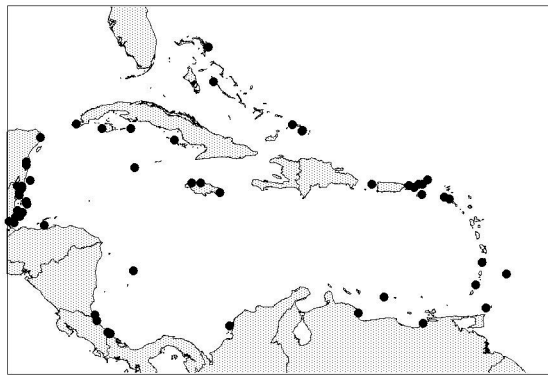
Formal use of marine reserves has grown rapidly since they were first established in New Zealand and Australia in the 1970s (Ballantine, 1989; Bohnsack, 1996). In the Caribbean, as well in many other tropical areas of the world, marine reserves are small and used primarily for conservation and tourism, with greatly variable levels of enforcement and compliance. However, serious consideration of marine reserves as a fisheries management and ecosystem protection tool has only developed recently (Plan

Development Team, 1990; Roberts and Polunin, 1994; Dugan and Davis, 1993; Rowley, 1994). . Their use has become more accepted and widespread due to the following (Bohnsack, 1998):

- a) international legal changes allowing coastal countries to get a greater control over their marine resources;
- b) increased research showing the beneficial effects of marine reserves; and
- c) frequent failures of fisheries managed by other management methods

In the Caribbean region, Roberts *et al.* (2001), in a temporal and spatial analysis of fish abundance and composition, demonstrated how long-established marine reserves in the U.S. Florida (Merritt Island National Wildlife Refuge) and a network of small reserves in St. Lucia (the Soufriere Marine Management Area) have enhanced catches in adjacent areas between 46% and 90%. As further evidence of the benefits of marine reserves, the Exuma Land and Sea Park in The Bahamas has served as a source of fish and conchs to the surrounding area (Sluka *et al.*, 1996; Stoner *et al.*, 1996; 1999).

Despite the clarity of the benefits of marine reserves in Caribbean, implementation of these is still a challenge. Appeldoorn and Lindeman (2003) conducted a survey of the Bahamas and the Caribbean marine reserves (excluding U.S.) and identified 55 no-take marine reserves in 21 countries (see figure below). The evaluation of geographic patterns, areas and habitats, as well as administrative attributes and compliance, showed that, even though marine reserves are distributed throughout the region, gaps are evident, particularly in Hispaniola Island, the mainland coasts of Honduras and Nicaragua, the north coast of Cuba, and portions along the southern margin of the Central Caribbean marine ecoregion (Panama, Colombia and Venezuela). The authors participated in the MAREP experts workshop and their analysis of the marine reserve weaknesses and limitations was considered in developing the MAREP.



Distribution of marine reserves (no-take areas) throughout the Caribbean region (Appeldoorn and Lindeman, 2003).

There are existing programs throughout the Caribbean addressing better siting, designing, planning, and managing of marine protected areas. A great majority of these relate to habitats, ecosystems, and species populations characterization, as well as human impacts assessment. Other programs address coral reef conservation through the alleviation of conflicts between different users (e.g. commercial fishermen and tourism operators). Although these programs address some of the questions relevant to no-take areas, they don't cover the most challenging issues such as biological connectivity and marine organisms seasonal and ontogenetic migration. Notwithstanding, recognizing the contribution of those projects and the need to build upon their achievements, we include in this document a brief description

of a selected list of major initiatives, particularly those addressing national, transboundary or multinational areas (see Appendix 1).

How MAREP was developed

The MAREP was developed through a process of consultation that included the following activities:

- Discussion of the need of developing a regional plan at the 54th and 55th Gulf and Caribbean Fisheries Institute (GCFI) annual meetings and other fora such as the International Coral Reef Initiative (ICRI) for the Tropical Americas '02 meeting, the IUCN World Commission of Protected Areas-Caribbean '02, etc.
- The recruitment of a project coordinator with knowledge of the issue, convening capacity, and skills for leading a consultation process;
- The recruitment of experts who could combine individual expertise with institutional representation from a variety of organizations and programs involved in MPA science and practice;
- The launching of an announcement for project proposals designed to be the core of the MAREP;
- The review and evaluation of 44 proposals by 30 selected experts from throughout the Caribbean region;
- The implementation of an expert workshop held in Miami on June 16-18, 2003 with the participation of **30** marine scientists, planners, and managers from 13 countries of the wider Caribbean representing 19 academic and marine resources management institutions (including universities, conservation NGOs, fisheries and protected areas management agencies, UN and regional organizations, and the Marine and Caribbean World Commissions of Protected Areas);
- The development of this MAREP and the selection of the project proposals that best address the Plan needs based on a set of criteria and following standard guidelines for project evaluation; and
- The presentation of the MAREP to potential donors

What needs MAREP addresses

Regional MPA needs were defined at the 2001 Gulf and Caribbean Fisheries Institute special MPA symposium in the Turks and Caicos Islands. Based on this analysis, a comprehensive literature review, and consultations with marine experts in the region, the following four themes were identified for better siting, designing, planning and managing marine reserves in the Caribbean region:

- **Research and monitoring**
- **Capacity building (education and training)**
- **Effective management (enforcement, sustainable financing, participatory planning and management)**
- **Communication and networking**

Research and monitoring (biophysical, socioeconomic and governance)

Due to the notable deterioration of fisheries resources in the Caribbean over the decades, fisheries research has shifted focus from fish stock assessment to the ecological status of fish populations and communities. During the 2001 GCFI meeting, 30 experts from 10 countries and a wide range of institutions examined issues at the interface of scientific research (see Lindeman and Appeldoorn, 2003, and www.gcfi.org). The science group agreed to focus primarily on no-take areas, within the context of larger, multi-use zoned MPAs and it endorsed the need for:

- a) Identification and description of critical ecological processes such as fish spawning aggregations

- and larval recruitment in order to define important population linkages
- b) Bringing stakeholders and researchers together into both research and management processes
 - c) Establishing explicit and realistic protocols for measuring effectiveness by defining measurable goals and an array of metrics for each goal to determine marine reserve effectiveness and to detect changes over appropriate time scales.

Priority needs and gaps in marine reserve research and monitoring were also identified from existing initiatives in the region and expert input and the MAREP's workshop and include:

- Reef fish spawning stocks characterization and evaluation;
- Biophysical connectivity and larval retention and recruitment;
- Ecosystem structure and functioning;
- The use of adequate indicators to monitor marine reserve success
- Socioeconomic research and monitoring

The experts emphasized the need for applying the right spatial scales for all these studies, the use of comparative approaches, the inclusion of socioeconomic factors (patterns of resources use) in the interpretation and application of research results, and the rapid application of results to management.

Capacity building

Education and training for stakeholders (including, among others, schoolchildren, teachers, resource users, protected area managers and planners, and policy makers), is a major issue for the success of marine reserves in the region. The notion of setting aside a portion of the ocean and restricting its use, and the multiple benefits that this provides to society at large, is new in the Caribbean region and needs extensive outreach efforts in order to be incorporated into the societies' cultural values. This is particularly important in small island states where many people depend on the quality of the coastal area for tourism and fishing, and where watershed and land uses have a strong impact in the coastal environment. Experts agreed on the need for using a creative combination of educational tools, for example, school classes at all levels, mass media, and convening workshops to facilitate communication between scientists, managers, and policy makers. The use of these tools could build trust in the benefits of marine reserves.

Among the most successful capacity building activities (in terms of geographic coverage and frequency) is the UNEP-Caribbean Regional Coordinating Unit sponsored Training of Trainers Course for Wider Caribbean MPA Managers, implemented with the support of ICRAN and other organizations. Each year, 12 –18 conservation professionals, mostly MPA managers but also park service technical staff and conservation stewards, receive a 2-week course on the different aspects of MPA management, including training and communication skills. The course is taught in English and Spanish at a venue associated with an existing MPA and provides the trainees basic knowledge on MPA management. Extensive networking opportunities are provided among and between the participants, the instructors (skilled MPA scientists and practitioners) and the local MPA staff that serves as the course venue. The initiative strives for the expansion of this effort as trainees receive financial and technical support from UNEP-CEP to hold their own training activities at home. Nevertheless, the impact of this activity is limited because the number of applicants is much greater than the financial resources available for support. College courses may also be beneficial to develop and educate MPA managers in the Caribbean region. In this context, and recognizing the need to train marine biologists and policy specialists in this subject, the Universidad Nacional Autónoma de México

and the University of Miami held the first joint graduate course on MPA management in Mexico in 2003. Other editions of this course are expected in the next years.

Other initiatives, such as training workshops on reef fish spawning aggregations research and conservation, have been held by The Nature Conservancy in Belize and U.S. Virgin Islands with participants from the Caribbean region. These workshops were the first stage of a more ambitious project: the establishment of a learning center for coral reef and fish spawning aggregation protection in the Caribbean region.

Innovative methods to train MPA managers and stewards, and educate stakeholders (school children, college students, local community groups, business sectors, and decision makers) on the current status of marine resources and the benefits of marine reserves have been identified as a critical need. Needs and gaps include:

- Dissemination of scientific information in understandable terms for the public
- Use of user-friendly media that can reach large audiences, e.g. web based education
- Education targeted towards specific audiences, e.g., decision makers and elected officials
- Incorporate marine reserve concepts into higher education curricula
- Conduct peer-to-peer workshops, e.g. fisher-to-fisher or manager-to-manager
- Marine resources management training activities that include facilitation, negotiation, and conflict management skills (briefly addressed in the Training of Trainers course for MPA managers)
- Evaluation of existing education strategies and programs
- Describe and implement existing successful education programs including where and how they can be used to avoid duplication
- Expand UNEP's Training of Trainers course for MPA managers exploring high tech tools (web-based, satellite broadcast) and alternative audiences (under and post graduate)
- Create and disseminate multilingual educational and training materials
- Dissemination of education and training strategies within existing networks
- Information about economic impact and benefits of marine reserves on the communities

Effective management

Effective management is an essential component in the success of marine reserves. Many MPAs lack an appropriate management plan or its application is very limited. Despite differences in biophysical and socio-cultural contexts, MPA managers could be guided by standard management tools and strategies to achieve success in community involvement, zoning scheme and regulations, adequate institutional arrangements for compliance and enforcement, sustainable financing, and adaptive management that addresses local human impact as well as global climate change. When adequately managed, these aspects can result in reduction of conflicts, building of trust, and compliance by users and other stakeholders. Revenue generation is also one of the most challenging issues facing MPA managers mostly due to a lack of an appropriate business plan. The publication "Funding Protected Area Conservation in the Wider Caribbean: a guide for Managers and Conservation Organizations", published by UNEP-CAR/RCU and The Nature Conservancy is an overview of the different funding strategies, including legislation, governmental regulations, or fiscal oversight.

Recognizing the importance of measuring MPA success the World Commission on Protected Areas-Marine, in partnership with World Wildlife Fund (WWF), led an expert consultation process to define

indicators of MPA management effectiveness. A series of biophysical, socioeconomic and governance indicators were established and profiled. WWF is implementing a pilot project in three marine reserves in the Caribbean (Hol Chan, Sian Ka'an and Banco Chinchorro) to test the usefulness and applicability of the methodology and determine if the indicators provide the key elements to assess MPA management effectiveness. This project will also be used to adjust and redirect the management strategies of these areas. The results from these three MPAs will be shared with the Caribbean region and globally. For more information about this initiative see <http://effectiveMPA.noaa.gov/>

The priority needs addressing marine reserve management effectiveness in the region include:

- The lack of management plans or their weak implementation
- Adequate compliance and enforcement of regulations
- Scientifically based zoning schemes and regulations
- Lack of business plans that achieve sustainable financing
- Improved community participation in management planning and implementation
- Dissemination of existing and proven management effectiveness evaluation programs
- Application of scientific research results in management

Communication and networking

The existing initiatives, including regional list servers and fora, have created a network of marine reserves scientists and practitioners in the region. However, there is a regional consensus that the potential of this network has not been fully achieved and that much can be done to make them more effective and efficient coordination mechanisms in terms of time, scope and geographic coverage. This project particularly addresses these needs by establishing a marine reserve experts network and a regionally coordinated enhancement plan for marine reserves. The WCPA-Marine initiative seeks to develop regional action plans with the Regional Working Group Leaders (WGL) and regional experts. WCPA-Marine intends to market the MAREP at regional meetings and workshops and through direct contact with the donor community. The MAREP will be reviewed annually to evaluate and determine requirements for continued implementation. The WGL will be consulted in the evaluation.

Communication and networking among practitioners is necessary to exchange information, build synergy, and share lessons learned across the Wider Caribbean. One existing network of marine protected area managers and scholars is the Caribbean Marine Protected Areas Network (CaMPAM) created in 1997. The objectives of the network are to provide training opportunities, exchange information, and communicate on problem resolution strategies. Due to lack of funding, the network (which has a listserver managed by UNEP-RCU) has not worked at its full capacity. Other listservers, such as the GCFI and Island Research Foundation, have provided a communication platform for MPA managers. Particularly, the GCFI has had a prominent role as a forum for MPA managers as demonstrated by an increasing number of marine reserve sessions since 1998 in the annual meetings. In addition, the Caribbean Conservation Association (CCA) is presently creating a regional information network. Nevertheless, the potential of communication tools has not been fully achieved to exchange information and lessons learned, communicate more effectively, and ultimately contribute to marine reserve mainstreaming as a tool for marine biodiversity and fisheries resources conservation.

Needs and gaps in communication and networking as identified by persons in the region and researchers include:

- Fully functional web based network of practitioners by strengthening existing networks or adding marine reserve working groups to the existing networks
- Strengthening communication between existing networks
- Determining clear objectives for the networks
- Determining factors and components that make networks function well and achieve their objectives

Attached is the list of the projects proposals that were selected to form part of the first phase of the MAREP. Some of them are being expanded, merged with others, or narrowed in focus following recommendations of the MAREP team of experts. They are all available to donors that are interested in exploring the possibility of supporting their implementation.

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APPENDIX 1

List of major regional conservation initiatives addressing the creation and effective management of marine reserves (no-take areas) as a tool for marine biodiversity protection and fisheries resources management in the wider Caribbean

1. *UNEP-International Coral Reef Action Network*. Established in 2000, this network is a collaborative effort developed to reverse the decline of the world's coral reefs. It consists of a set of inter-linked, complementary activities designed to assist with the implementation of the International Coral Reef Initiative's (ICRI) Framework for Action, and to facilitate the proliferation of good practices for coral reef management and conservation. UNEP's Caribbean Environment Programme (and its Regional Coordinating Unit (UNEP-CAR/RCU)) is the regional contact point and facilitator for implementation of the ICRI process. The ICRAN project (primarily funded by the United Nations Foundation (UNF) includes several components: 1) management action; 2) communication; and 3) assessment and information dissemination. It also seeks to attract other donors to implement complementary elements of the project. The project encompasses the establishment of demonstration sites used to promote best practices at selected target sites as well as other MPAs. The project also includes the support of low cost, standardized coral reef monitoring efforts among all participation sites and marine protected areas, including the Global Coral Reef Monitoring Network (GCRMN), the Caribbean Coastal Marine Productivity Programme (CARICOMP), ReefBase, ReefCheck, Atlantic and Gulf Rapid Reef Assessment (AGRRA), the Reefs at Risk threat assessment, a coral reef valuation and policy analysis, and the update and mapping of the existing MPA database for the Wider Caribbean. The development of focused and effective public awareness activities (e.g. campaigns, materials) to raise awareness and influence change, especially around the target communities, is also included. All projects are developed in collaboration with organizations throughout the region.
2. *Gulf and Caribbean Fisheries Institute (GCFI)*- The GCFI provides resources for workshops and symposia related to marine protected areas. Among the most notable are the one held in 2000 at the 53rd GCFI annual meeting in St. Croix, U.S.V.I., and a special Symposium during the 54th annual meeting in 2001 dedicated to marine protected areas (MPAs). In the latter one, two documents were generated: "Improving Applications of Science in MPA Design and Management", and "Human system connectivity: a need for MPA management effectiveness" (see www.gcfi.org). In 2002, the symposia "Reef Spawning Aggregation Conservation", and "MPA Socioeconomics" were held during the 54th annual meeting. The former was attended by about 200 scientists, fishermen, MPA managers, fisheries officers, politicians and students. The attendees agreed that marine reserves are an important tool to conserve and rationally manage fish spawning aggregations and emphasized the need to expand the number of marine reserves, but also emphasize the importance of applying scientific information (natural as well as socioeconomic) to site, delineate and effectively manage them. The GCFI is the oldest professional organization of fisheries scientists in the Wider Caribbean. It provides a forum to exchange information on marine resources and their issues by bringing together managers, researchers, educators, students, fishers, and politicians from over 20 nationalities representing academia, resource management government agencies, private sector, conservation organizations, fishing industry, policy-makers, and other stakeholders. In addition to the annual meeting in which the latest issues of marine fisheries research and management are discussed, a listserver provides a real-time forum for

discussion of topics that are of regional importance as well as a mechanism for posting information and soliciting expert advice on issues that require immediate assistance. The web site has announcements of meetings, marine resource news from the region, a discussion board, and results of findings from GCFI workshops. Links are also provided to marine organizations in the region.

3. *MesoAmerican Barrier Reef System Initiative (MBRI)*. This is a regional program designed to jointly manage and protect coral reef ecosystems by strengthening and coordinating national policies, regulations, and institutional arrangements across Mexico, Belize, Guatemala, and Honduras for marine ecosystem conservation and sustainable use. Under this program, a regional project, entitled the “Conservation and Sustainable Use of the Mesoamerican Barrier Reef System”, is being developed with GEF and bilateral donor support. Specific objectives of the project include: (i) develop integrated management plans for the sustainable use of coastal and marine ecosystems and the diverse resources, goods and services they provide; (ii) strengthen local and national capacity for environmental management through education, information sharing and training; (iii) standardize ecosystem monitoring and facilitate its execution and dissemination of results throughout the region; (iv) strengthen institutions and programs for maintenance of water quality and prevention of contamination, particularly in transboundary situations; and (v) establish transnational coordination and cooperation mechanisms for harmonization of policies (including laws, standards, regulations and enforcement mechanisms) related to the conservation and sustainable use of the MBRS. For more information, see <http://wbln0018.worldbank.org/MesoAmericanBarrierReef/>
4. *The International Coral Reef Initiative (ICRI)*. ICRI is an environmental partnership and an informal mechanism that allows representatives of over 80 developing countries with coral reefs to sit in equal partnership with major donor countries and development banks, international environmental and development agencies, scientific associations, the private sector and NGOs to decide on the best strategies to conserve the world's coral reef resources. The ICRI for Tropical Americas is coordinated by the UNEP Caribbean Regional Coordinating Unit in Kingston, Jamaica. The last meeting of the ICRI for the Tropical Americas (June, 2002) examined the main problems facing coral reefs MPAs, and provided a series of recommendations. A report of this meeting with recommendations will be available at www.cep.unep.org.
5. *Caribbean Coastal Marine Productivity Program (CARICOMP)*. The Caribbean Coastal Marine Productivity (CARICOMP) Programme is a regional scientific effort to study land-sea interaction process, to monitor for change, and to provide appropriate scientific information for management. The Programme focuses on understanding the productivity, structure and functions of three important coastal ecosystems throughout the region: mangroves, seagrasses and reefs, throughout the region. Most sites are within MPAs. Scientific monitoring of these three ecosystems is performed on a daily, weekly and twice annual basis throughout the region using the same monitoring protocol. Twenty-nine marine laboratories, parks and reserves, in 13 islands and 9 mainland countries have now joined the CARICOMP Programme which has a central CARICOMP Data Management Centre (DMC) at the University of the West Indies in Kingston, Jamaica. Summaries of all data are distributed to each site by the DMC which also coordinates investigations of transient regional phenomena, such as mortality in sea fans and coral bleaching. Results of this project can be found at <http://www.marine.usf.edu/FIO/caricomp.html>.

6. *Socioeconomic Monitoring for Caribbean Coastal Management*. Developed by the University of the West Indies (UWI) Natural Resource Management Programme (NRM) and World Commission on Protected Areas-Marine (WCPA-Marine), the project aims at establishing a long-term, region-wide monitoring system for collecting, analyzing and comparing socioeconomic data through collaborating coastal management programs across the Wider Caribbean. The socioeconomic monitoring program is designed to help coastal managers better understand the communities whose activities affect, and are affected by, coastal management decisions. Managers and stakeholders can use such information to minimize the negative socio-economic impacts of decisions and demonstrate the value of coastal resources and incorporate community concerns into decision-making. This initiative is part of the Global Coral Reef Monitoring Network's goal to promote socioeconomic monitoring around the world, based in part on the *Socioeconomic Manual for Coral Reef Management* released in November 2000. Major outputs are: 1. Development of concise socioeconomic monitoring guidelines for coastal management programs in the Caribbean, building on existing ones; 2. Establishment of socioeconomic monitoring practices in the region; 3. Implementation of a workshop at UWI to train about 15 coastal managers from the region on how to develop and implement socioeconomic monitoring programs based on the guidelines; and 4. Establishment of Caribbean socioeconomic monitoring programs for coastal management through collaborating coastal programs and projects, with the UWI providing support training and serving as a focal point for information sharing among participants to ensure sustainability.
7. *Testing Management Effectiveness Guidelines in three MPAs in the Mesoamerican Caribbean (WWF-ICRAN-NOAA)*. The project aims at testing the usefulness and applicability of WCPA/WWF methodology for assessing management effectiveness in three MPAs in the Mesoamerican Caribbean Reef ecoregions: Sian Ka'an and Banco Chinchorro Biosphere Reserves, in Mexico, and Hol Chan Marine Reserve, in Belize. They will also be used to adjust and redirect the management strategies of these areas. The results will be shared with WCPA, WWF and ICRAN so as to improve upon the guidelines and disseminate this experience throughout the Caribbean region and globally.
8. *A regional approach for promoting long-term sustainable use and conservation of marine resources in the Eastern Caribbean States (ECS)*. The project coordinated by NOAA, is stated as follows: a) Development of a regional information database on fisheries harvests and marine protected areas in the ECS; b) Development of a comprehensive meta-database on existing information on the life history (life stages), relative abundance and distribution, of fishes and invertebrates by species for selected ECS islands; c) Assessment of coral reef community structure at selected existing and candidate no-take reserve sites in the ECS; d) Assessment of ocean current dynamics impacting selected existing and candidate no-take reserve sites in the ECS; e) Development of GIS baseline information and maps to that show the distribution of major habitat types, coastal zone use, protected areas, and fish distribution across the region; f) Implementation of a workshop in the ECS on the scientifically quantitative basis for establishment and evaluation of no-take marine reserve management regimes; g) Development of proposals for pilot projects in one or more ECS countries to demonstrate the effectiveness of this scientifically quantitative approach for establishing marine no-take reserves; and h) Development and preliminary training for an information clearinghouse and a web-based GIS program through CEPNET or a similar program. This project is still in progress.
9. *UNEP-Specially Protected Areas and Wildlife (SPA-W) Programme for the Wider Caribbean*.

Established since 1990 following the adoption of the only biodiversity-related legal agreement for the region, the SPAW Protocol of the Cartagena Convention. The Programme was developed to respond to the main issues being addressed under the Protocol and to assist governments of the region in meeting the SPAW objectives. Major areas of focus of the SPAW Programme include: 1) Strengthening of protected areas, including MPAs with the establishment of a network of MPA managers (CaMPAM), a Small Grants Fund for MPAs and a Training of Trainers Programme; 2) Development of guidelines for protected area establishment and management, including guidelines for sustainable financing and their implementation; 3) Conservation of endangered and threatened species, including management and recovery plans for key species of regional concern; and 4) Conservation of major coastal and marine ecosystems, including mangroves, monitoring, assessment and best practices for coral reefs(see ICRAN below), promotion of best practices for sustainable coastal tourism and education and awareness. With the entry into force of the SPAW Protocol in 2000, this programme is expected to grow and expand to continue assisting governments with implementation of the Protocol."

10. *Transforming Coral Reef Conservation in the 21st Century.* The Nature Conservancy (TNC) and Conservation International (CI) have led a highly collaborative global initiative to transform the way marine protected areas (MPAs) for coral reefs and associated habitats are selected, created, designed, managed, and financed. The goal is to catalyze a worldwide effort to establish networks of MPAs within high-biodiversity tropical marine ecoregions that are designed to survive, managed to last, and connected like strings of pearls across our ocean planet. The initiative includes MPA sustainable financing mechanism, dissemination of lessons learned across the region, the incorporation of coral bleaching resilience, biological connectivity and spawning aggregation sites to marine reserve siting criteria. For more information on this initiative, contact Scott Smith (ssmith@tnc.org) or Rod Salm (ssalm@tnc.org).
11. *Greater Caribbean Ecoregional Plan.* The Nature Conservancy is conducting an ecoregional assessment of the terrestrial (and freshwater) and marine biodiversity values and conservation issues of the wider Caribbean region from The Bahamas south to Venezuela and Trinidad and Tobago. The project involves a number of TNC scientists and conservation experts working together with collaborators and aims at establishing strategies for conservation actions using TNC's Conservation by Design methodology. The process includes the compilation and mapping of conservation targets (species and biological communities) occurrence and socioeconomic information, the analysis of the impact of resource use, a threat assessment, the definition of conservation goals to maintain the targets' ecological integrity and viability, and the establishment of strategies for threat abatement. The project includes collaboration with local and regional experts, the consultation stakeholders, and the development of strategic alliances with relevant governmental and non-governmental organizations. The information will be accessible to the public by 2005, and the data base will dynamic and updated. For more information on the CERP, contact Richard Jeo (ckernana@tnc.org the project manager).
12. *Establishment of effectively managed MPA platform sites as foundations for resilient networks of functionally-connected MPAs.* This project has the long-term objective of helping create a resilient network of well-managed mutually replenishing MPAs designed to mitigate local and global threats within the Meso-American Reef. Given the size of this ecoregion, the number of public and private institutions involved, and the costs of creating a viable reef network, TNC recognizes it is only one of many entities participating in this challenging program. Therefore, the Conservancy

has identified a specific set of activities in which it believes it can make a significant impact. These activities build on a strong foundation of work with NGO partner organizations in the MAR region, and its important scientific contributions to reef monitoring and MPA management. The maintenance of coastal and marine natural community structure, habitats, species, and ecological functions at least at current levels. Toward that end, the Meso-American Reef ecoregion is served by a resilient network of mutually replenishing MPAs that are well managed, financially self-sustaining, effectively linked to coastal and inland communities, and able to facilitate and maintain the ecological make-up and functions of the reef. In furtherance of these goals, the project will seek to accomplish the following specific outcomes by the end of 2008: A MAR ecoregional plan is adopted and implemented that reflects agreement by all key conservation partners (local and international NGOs, government agencies and donors) on priority programs and activities, adoption of conservation best practices, and sharing of scientific and program data; five MPA platform sites and their management partners are strengthened sufficiently so that they are integral links in the MAR regional MPA network; all high priority reef fish spawning aggregation sites (SPAGs) throughout the MAR identified, monitored, and protected by inclusion in existing or new MPAs; sites resistant to coral bleaching throughout the MAR are identified and monitored; the technical, managerial and marine science skills of at least 2,000 people enhanced and result in improved MPA management; new economic opportunities for fishers and their families, more effective community leaders and conservation activists, and improved scientific understanding by both private and public stakeholders.

13. *Territorial Marine Park of the U.S. Virgin Islands.* In January 2003, the Governor of the U.S. Virgin Islands signed into law legislation that created the first territorial marine park, the 60 square mile East End Marine Park, encircling the entire East End of St. Croix. The park includes 5 square miles of no-take areas, protecting the majority of the near shore reef habitats on the east end. The legislation was based on a collaboratively developed Management Plan, written by The Nature Conservancy (TNC) over a nearly one year period, that included significant stakeholder involvement from fishermen, diver shop operators, yachters, local and federal governmental agencies, non-governmental organizations and universities. While the Coastal Zone Management (CZM) Division of the territory's Department of Planning and Natural Resources (DPNR) is responsible for implementing the Management Plan, local stakeholders maintain a proactive role in the implementation of the Management Plan, serving on a East End Marine Park Management Committee. E.g., TNC assisted CZM with writing draft Rules and Regulations for the Park, which still need to be approved, as the Park can not begin functioning until they are in place. The Ocean Conservancy (TOC) is currently coordinating NOAA's Coral Reef Local Action Strategies which are focused on addressing recreational overuse, education/outreach, overfishing, and upland pollution and erosion within the Park. TNC, the University of the Virgin Islands (UVI), and DPNR are providing leadership on individual strategies. TOC, TNC, and UVI are also collaborating on National Fish and Wildlife Foundation funded projects, such as utilizing local fishermen trained as researchers to map and characterize the territory's (and British Virgin Islands) reef fish spawning aggregation sites, developing an audio-visual displays based on anecdotal and research information in order to illustrate the phenomenon of Understanding Shifting Baselines in Coral Reef Ecosystems of the US Virgin Islands, and others. All these activities aim at increasing awareness among stakeholders on the benefits of marine reserves and promoting the cooperation of the local community with the marine park.

14. *A Caribbean-wide survey of no-take marine reserves" spatial coverage and attributes of effectiveness.* The authors of this paper (see bibliography list below) compiled information on reserves from 21 countries in order to 1) assemble a spatial framework to aid development of networks of reserves at the most effective spatial scales, and 2) aid policy makers in establishing reserves that are science-based and possess optimal management attributes. The study concluded in the following: since 1958, there have been over 50 reserves established in the Caribbean (an additional 30 in Bermuda) with the rate of implementation increasing since the mid 1980's; most reserves are small (< 1,000 ha) and few contain the range of habitats necessary for protecting species through their ontogeny; habitats are often not fully characterized, and the role of reserves in protecting and networking different habitats cannot be ascertained. Reserves are distributed throughout the region, with the highest density in Mesoamerica; but significant geographic gaps exist. It is unlikely that reserve-enhanced larval dispersal significantly networks populations on a regional basis, although this may occur subregionally (e.g., Mesoamerica). Less than 20% of the reserves were scored as fully compliant, but half offer potentially significant levels of protection.